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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/715,066 | 11/17/2003 | Timothy O'Brien | 022438.45514 | 6392 |

7590 08/27/2007

McTavish Patent Firm
429 Birchwood Courts
Birchwood, MN 55110

| EXAMINER | |
|---|---|
| REDDIG, PETER J | |
| ART UNIT | PAPER NUMBER |
| 1642 | |
| MAIL DATE | DELIVERY MODE |
| 08/27/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/715,066 | O'BRIEN ET AL. | |
| | Examiner | Art Unit | |
| | Peter J. Reddig | 1642 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *05 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,2 and 21-26* is/are pending in the application.

4a) Of the above claim(s) *21,22,24 and 26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 23, and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. Applicant's election without traverse of SEQ ID NO: 4 as the species of CA125 molecule in the reply filed on 6/5/2007 in reply to the Office Action of 5/3/2007 is acknowledged.

2. Claims 1, 2, and 21-26 are pending.

3. Claims 21, 22, 24, and 26 are hereby withdrawn from further consideration by the examiner under 37 CFR 1.142(b) as being drawn to a non-elected invention.

4. Claims 1, 2, 23, and 25 as drawn to SEQ ID NO: 4 are currently under consideration.

### *Priority*

5. It is noted that the priority date of the instant application, 10/715,066, was set as November 15, 2002 based on the claim of priority to provisional application 60/427,045 which provided support for SEQ ID NO: 4. As the claims are being examined as drawn to SEQ ID NO: 4, the priority date remains November 15, 2002.

### *New Grounds of Rejection*

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 2, 23, and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are indefinite because it is unclear how a nucleic acid is "adapted to express in a cell". Are changes being made to the nucleic acid sequence itself, i.e. SEQ ID NO: 4 for adaptation? Is the insertion in the expression vector the adaptation? Is the nucleic acid sequence

being chemically modified? In the absence of a teaching in the specification as to how a sequence is "adapted to express in a cell", the metes and bounds of the claim cannot be determined.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1, 2, 23, and 25 are rejected under 35 USC 112, first paragraph, as the specification does not contain a written description of the claimed invention. The limitation of "adapted to express in a cell" in claim 1 and 23 has no clear support in the specification and the claims as originally filed. Applicants have pointed to support for amended claim 1 and 23 in originally filed claims l, 4, 14, and 15, SEQ ID NOS: 4 and 5, and by paragraph [0046] of the specification. A review of the specification discloses support for with a cDNA sequence, one skilled in the art has an easily renewable source of purified CA125. Portions of this cDNA sequence can be expressed to make CA125 polypeptides and these polypeptides can be used to make monoclonal antibodies. These monoclonal antibodies can be made by one skilled in the art to portions of the protein which heretofore do not have any monoclonal antibodies, such as the amino terminal sequence (para 0046), SEQ ID NO: 4 and 5, an isolated nucleic acid molecule encoding CA125 (original claim 1), the isolated nucleic acid molecule of claim 2 (SEQ ID NO: 4), wherein said molecule is a fragment thereof (original claim 2), a polypeptide with the amino acid sequence selected from the group consisting of: (a) the amino acid sequence set forth in SEQ ID NO: 5; (b) an amino acid sequence having at least 50% sequence identity to said sequence; (c) a conservative variant of an one of (a) to (b); and (d) a fragment of any one of (a)

to (c) (original claim 14), a purified antibody that selectively binds to an amino acid sequence of the CA125 protein: (a) wherein the amino acid sequence of the CA125 protein comprises the amino acid sequence set forth in SEQ ID NO: 5; (b) an amino acid sequence having at least 50% sequence identity to said sequence; (c) a conservative variant of any one of (a) to (b); and (d) a fragment of any one of (a) to (c) (original claim 15). The suggested support is not found persuasive because there is nothing in the specification to suggest a nucleic acid molecule encoding CA125 (SEQ ID NO: 5) or a fragment thereof that is "adapted to express in a cell". The subject matter claimed in claims 1, 2, 23, and 25 broadens the scope of the invention as originally disclosed in the specification.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 23, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Yin and Lloyd (J. Biol. Chem. July 20, 2001. 276: 27371-27375) as evidenced by Appendix 1, which is an alignment of nucleic acid residues 63765-66765 of SEQ ID NO: 4.

The claims are drawn to:

1. An isolated nucleic acid molecule (SEQ ID NO: 4) encoding CA125 (SEQ ID NO: 5) or a fragment thereof, wherein the isolated nucleic acid molecule is an expression vector and is adapted to express in a cell CA125 (SEQ ID NO: 5) or a fragment thereof.

23. The isolated nucleic acid molecule of claim 1 wherein the isolated nucleic acid molecule encodes and is adapted to express in a cell a fragment of SEQ ID NO: 5 wherein the expressed fragment can be used to make monoclonal antibodies.

25. The isolated nucleic acid molecule of claim 23 wherein the expressed fragment can be used to make monoclonal antibodies that specifically recognize CA125 (SEQ ID NO: 5).

Given the indefinite nature of the claims, it is assumed for examination purposes that a DNA in an expression vector is "adapted to express in a cell".

Yin and Lloyd teach cloning a C-terminal fragment of CA125 by screening a λZAP cDNA expression library of cDNA from OVCAR3 cells with an antibody to CA125, see Abstract, Materials and Methods, p. 27,372, and the Figures. Given that the λZAP cDNA vectors express fragments of cDNA that are detected by a CA125, Lin and Lloyd teach an isolated expression vector with a fragment of SEQ ID NO: 4 encoding a fragment of CA125 that is adapted to express in a cell a fragment of SEQ ID NO: 5.

Given that the polynucleotide of the prior art reference encodes a polypeptide that is recognized by an antibody to CA125, it would be expected that the encoded fragment could be used to make monoclonal antibodies that specifically recognize CA125 (SEQ ID NO: 5). Although the reference does not specifically state that the isolated CA125 nucleotide fragment was used to make monoclonal antibodies that specifically recognize CA125, the claimed product appears to be the same as the prior art product, absent a showing of unobvious differences. The office does not have the facilities and resources to provide the factual evidence needed in order to establish that the product of the prior art does not possess the same material, structural and functional characteristics of the claimed product. In the absence of evidence to the contrary, the

burden is on the applicant to prove that the claimed product is different from those taught by the prior art and to establish patentable differences. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA).

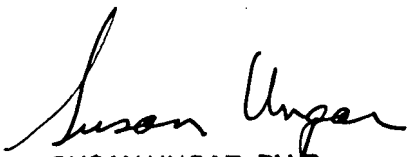
9. All other objections and rejections set forth in the Office Action of 1/18/2007 are withdrawn.

10. No claims allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J. Reddig whose telephone number is (571) 272-9031. The examiner can normally be reached on M-F 8:30 a.m.-5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shanon Foley can be reached on (571) 272-0898. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



SUSAN UNGAR, PH.D
PRIMARY EXAMINER

Peter J. Reddig
Examiner
Art Unit 1642

PJR

Appendix 1

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AF361486
LOCUS       AF361486               21112 bp    mRNA    linear   PRI 08-SEP-
2003
DEFINITION  Homo sapiens mucin 16 (MUC16) mRNA, partial cds.
ACCESSION   AF361486
VERSION     AF361486.3  GI:34501466
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  ORGANISM  Homo sapiens
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            Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;
            Catarrhini; Hominidae; Homo.
REFERENCE   1  (bases 1 to 21112)
  AUTHORS   Yin,B.W. and Lloyd,K.O.
  TITLE     Molecular cloning of the ca125 ovarian cancer antigen.
            identification as a new mucin, muc16
  JOURNAL   J. Biol. Chem. 276 (29), 27371-27375 (2001)
   PUBMED   11369781
REFERENCE   2  (bases 1 to 21112)
  AUTHORS   Lloyd,K.O. and Yin,B.W.T.
  TITLE     Direct Submission
  JOURNAL   Submitted (15-MAR-2001) Sloan-Kettering Institute for Cancer
            Research, 1275 York Ave., New York, NY 10021, USA
REFERENCE   3  (bases 1 to 21112)
  AUTHORS   Lloyd,K.O. and Yin,B.W.T.
  TITLE     Direct Submission
  JOURNAL   Submitted (26-AUG-2003) Sloan-Kettering Institute for Cancer
            Research, 1275 York Ave., New York, NY 10021, USA
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REFERENCE   4  (bases 1 to 21112)
  AUTHORS   Lloyd,K.O. and Yin,B.W.T.
  TITLE     Direct Submission
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  REMARK    Sequence update by submitter
COMMENT     On Sep 8, 2003 this sequence version replaced gi:34223840.
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TLNASFHWLGSTYQLVDIHVTEMESSVYQPTSSSSTQHFYLNFTITNLPYSQDKAQPG

TTNYQRNKRNIEDALNQLFRNSSIKSYFSDCQVSTFRSVPNRHHTGVDSLCNFSPLAR

RVDRVAIYEEFLRMTRNGTQLQNFTLDRSSVLVDGYSPNRNEPLTGNSDLPFWAVILI

GLAGLLGLITCLICGVLVTTRRRKKEGEYNVQQQCPGYYQSHLDLEDLQ"
ORIGIN

Query Match 99.8%; Score 2994.6; DB 5; Length 21112;
Best Local Similarity 99.9%; Pred. No. 0;
Matches 2997; Conservative 0; Mismatches 4; Indels 0; Gaps 0;

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Qy          1 GGCAGCCACCAAAGTGGATGCCATCTGCACCTACCGCCCTGATCCCAAAAGCCCTGGACT 60
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Db      18090 GGCAGCCACCAAAGTGGATGCCATCTGCACCTACCGCCCTGATCCCAAAAGCCCTGGACT
18149

Qy         61 GGACAGAGAGCAGCTATACTGGGAGCTGAGCCAGCTAACCCACAGCATCACTGAGCTGGG 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      18150 GGACAGAGAGCAGCTATACTGGGAGCTGAGCCAGCTAACCCACAGCATCACTGAGCTGGG
18209

Qy        121 CCCCTACACCCTGGACAGGGACAGTCTCTATGTCAATGGTTTCACACAGCGGAGCTCTGT 180
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Db      18210 CCCCTACACCCTGGACAGGGACAGTCTCTATGTCAATGGTTTCACACAGCGGAGCTCTGT
18269

Qy        181 GCCCACCACTAGCATTCCTGGGACCCCCACAGTGGACCTGGGAACATCTGGGACTCCAGT 240
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Db      18270 GCCCACCACTAGCATTCCTGGGACCCCCACAGTGGACCTGGGAACATCTGGGACTCCAGT
18329

Qy        241 TTCTAAACCTGGTCCCTCGGCTGCCAGCCCTCTCCTGGTGCTATTCACTCTCAACTTCAC 300
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Db      18330 TTCTAAACCTGGTCCCTCGGCTGCCAGCCCTCTCCTGGTGCTATTCACTCTCAACTTCAC
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18389

Qy        301 CATCACCAACCTGCGGTATGAGGAGAACATGCAGCACCCTGGCTCCAGGAAGTTCAACAC 360
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Db      18390 CATCACCAACCTGCGGTATGAGGAGAACATGCAGCACCCTGGCTCCAGGAAGTTCAACAC
18449

Qy        361 CACGGAGAGGGTCCTTCAGGGCCTGCTCAGGTCCCTGTTCAAGAGCACCAGTGTTGGCCC 420
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Db      18450 CACGGAGAGGGTCCTTCAGGGCCTGCTCAGGTCCCTGTTCAAGAGCACCAGTGTTGGCCC
18509

Qy        421 TCTGTACTCTGGCTGCAGACTGACTTTGCTCAGGCCTGAAAAGGATGGGACAGCCACTGG 480
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Db      18510 TCTGTACTCTGGCTGCAGACTGACTTTGCTCAGGCCTGAAAAGGATGGGACAGCCACTGG
18569

Qy        481 AGTGGATGCCATCTGCACCCACCACCCTGACCCCAAAAGCCCTAGGCTGGACAGAGAGCA 540
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Db      18570 AGTGGATGCCATCTGCACCCACCACCCTGACCCCAAAAGCCCTAGGCTGGACAGAGAGCA
18629

Qy        541 GCTGTATTGGGAGCTGAGCCAGCTGACCCACAATATCACTGAGCTGGGCCACTATGCCCT 600
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Db      18630 GCTGTATTGGGAGCTGAGCCAGCTGACCCACAATATCACTGAGCTGGGCCCCTATGCCCT
18689

Qy        601 GGACAACGACAGCCTCTTTGTCAATGGTTTCACTCATCGGAGCTCTGTGTCCACCACCAG 660
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Db      18690 GGACAACGACAGCCTCTTTGTCAATGGTTTCACTCATCGGAGCTCTGTGTCCACCACCAG
18749

Qy        661 CACTCCTGGGACCCCCACAGTGTATCTGGGAGCATCTAAGACTCCAGCCTCGATATTTGG 720
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18809

Qy        721 CCCTTCAGCTGCCAGCCATCTCCTGATACTATTCACCCTCAACTTCACCATCACTAACCT 780
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18869

Qy        781 GCGGTATGAGGAGAACATGTGGCCTGGCTCCAGGAAGTTCAACACTACAGAGAGGGTCCT 840
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Db      18870 GCGGTATGAGGAGAACATGTGGCCTGGCTCCAGGAAGTTCAACACTACAGAGAGGGTCCT
18929

Qy        841 TCAGGGCCTGCTAAGGCCCTTGTTCAAGAACACCAGTGTTGGCCCTCTGTACTCTGGCTC 900
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Db      18930 TCAGGGCCTGCTAAGGCCCTTGTTCAAGAACACCAGTGTTGGCCCTCTGTACTCTGGCTG
18989

Qy        901 CAGGCTGACCTTGCTCAGGCCAGAGAAAGATGGGGAAGCCACCGGAGTGGATGCCATCTG 960
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Db      18990 CAGGCTGACCTTGCTCAGGCCAGAGAAAGATGGGGAAGCCACCGGAGTGGATGCCATCTG
19049

Qy        961 CACCCACCGCCCTGACCCCACAGGCCCTGGGCTGGACAGAGAGCAGCTGTATTTGGAGCT
1020
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Db      19050 CACCCACCGCCCTGACCCCACAGGCCCTGGGCTGGACAGAGAGCAGCTGTATTTGGAGCT
19109

Qy       1021 GAGCCAGCTGACCCACAGCATCACTGAGCTGGGCCCCTACACACTGGACAGGGACAGTCT
1080
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Db      19110 GAGCCAGCTGACCCACAGCATCACTGAGCTGGGCCCCTACACACTGGACAGGGACAGTCT
19169

Qy       1081 CTATGTCAATGGTTTCACCCATCGGAGCTCTGTACCCACCACCAGCACCGGGGTGGTCAG
1140
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Db      19170 CTATGTCAATGGTTTCACCCATCGGAGCTCTGTACCCACCACCAGCACCGGGGTGGTCAG
19229

Qy       1141 CGAGGAGCCATTCACACTGAACTTCACCATCAACAACCTGCGCTACATGGCGGACATGGG
1200
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Db      19230 CGAGGAGCCATTCACACTGAACTTCACCATCAACAACCTGCGCTACATGGCGGACATGGG
19289

Qy       1201 CCAACCCGGCTCCCTCAAGTTCAACATCACAGACAACGTCATGAAGCACCTGCTCAGTCC
1260
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Db      19290 CCAACCCGGCTCCCTCAAGTTCAACATCACAGACAACGTCATGCAGCACCTGCTCAGTCC
19349

Qy       1261 TTTGTTCCAGAGGAGCAGCCTGGGTGCACGGTACACAGGCTGCAGGGTCATCGCACTAAG
1320
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Db      19350 TTTGTTCCAGAGGAGCAGCCTGGGTGCACGGTACACAGGCTGCAGGGTCATCGCACTAAG
19409

Qy       1321 GTCTGTGAAGAACGGTGCTGAGACACGGGTGGACCTCCTCTGCACCTACCTGCAGCCCCT
1380
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Db      19410 GTCTGTGAAGAACGGTGCTGAGACACGGGTGGACCTCCTCTGCACCTACCTGCAGCCCCT
19469

Qy       1381 CAGCGGCCCAGGTCTGCCTATCAAGCAGGTGTTCCATGAGCTGAGCCAGCAGACCCATGG
1440
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19529

Qy       1441 CATCACCCGGCTGGGCCCCTACTCTCTGGACAAAGACAGCCTCTACCTTAACGGTTACAA
1500
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Db      19530 CATCACCCGGCTGGGCCCCTACTCTCTGGACAAAGACAGCCTCTACCTTAACGGTTACAA
19589

Qy       1501 TGAACCTGGTCTAGATGAGCCTCCTACAACTCCCAAGCCAGCCACCACATTCCTGCCTCC
1560
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19649

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1620
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19709

Qy       1621 CATCTCCAATCTCCAGTATTCACCAGATATGGGCAAGGGCTCAGCTACATTCAACTCCAC
1680
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19769

Qy       1681 CGAGGGGGTCCTTCAGCACCTGCTCAGACCCTTGTTCCAGAAGAGCAGCATGGGCCCCTT
1740
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19829

Qy       1741 CTACTTGGGTTGCCAACTGATCTCCCTCAGGCCTGAGAAGGATGGGGCAGCCACTGGTGT
1800
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19889

Qy       1801 GGACACCACCTGCACCTACCACCCTGACCCTGTGGGCCCCGGGCTGGACATACAGCAGCT
1860
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19949

Qy       1861 TTACTGGGAGCTGAGTCAGCTGACCCATGGTGTCACCCAACTGGGCTTCTATGTCCTGGA
1920
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20009

Qy       1921 CAGGGATAGCCTCTTCATCAATGGCTATGCACCCCAGAATTTATCAATCCGGGGCGAGTA
1980
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Db      20010 CAGGGATAGCCTCTTCATCAATGGCTATGCACCCCAGAATTTATCAATCCGGGGCGAGTA
20069

Qy       1981 CCAGATAAATTTCCACATTGTCAACTGGAACCTCAGTAATCCAGACCCCACATCCTCAGA
2040
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Db      20070 CCAGATAAATTTCCACATTGTCAACTGGAACCTCAGTAATCCAGACCCCACATCCTCAGA
20129

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2100
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20189

Qy       2101 ACTACATGACACATTCCGCTTCTGCCTGGTCACCAACTTGACGATGGACTCCGTGTTGGT
2160
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20249

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2220
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Db      20250 CACTGTCAAGGCATTGTTCTCCTCCAATTTGGACCCCAGCCTGGTGGAGCAAGTCTTTCT
20309

Qy       2221 AGATAAGACCCTGAATGCCTCATTCCATTGGCTGGGCTCCACCTACCAGTTGGTGGACAT
2280
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20369

Qy       2281 CCATGTGACAGAAATGGAGTCATCAGTTTATCAACCAACAAGCAGCTCCAGCACCCAGCA
2340
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20429

Qy       2341 CTTCTACCTGAATTTCACCATCACCAACCTACCATATTCCCAGGACAAAGCCCAGCCAGG
2400
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20489

Qy       2401 CACCACCAATTACCAGAGGAACAAAAGGAATATTGAGGATGCGCTCAACCAACTCTTCCG
2460
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20549

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2520
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Db      20550 AAACAGCAGCATCAAGAGTTATTTTTCTGACTGTCAAGTTTCAACATTCAGGTCTGTCCC
20609

Qy       2521 CAACAGGCACCACACCGGGGTGGACTCCCTGTGTAACTTCTCGCCACTGGCTCGGAGAGT
2580
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Db      20610 CAACAGGCACCACACCGGGGTGGACTCCCTGTGTAACTTCTCGCCACTGGCTCGGAGAGT
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Qy       2581 AGACAGAGTTGCCATCTATGAGGAATTTCTGCGGATGACCCGGAATGGTACCCAGCTGCA
2640
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20729

Qy       2641 GAACTTCACCCTGGACAGGAGCAGTGTCCTTGTGGATGGGTATTCTCCCAACAGAAATGA
2700
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Qy       2701 GCCCTTAACTGGGAATTCTGACCTTCCCTTCTGGGCTGTCATCCTCATCGGCTTGGCAGG
2760
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21029

Qy       2941 GGTCCAAAGAAGCTTGGCTGGGGCAGAAATAAACCATATTGGTCGGAAAAAAAAAAAAAA
3000
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21089

Qy       3001 A 3001
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Db      21090 A 21090
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